(12) **UK Patent Application** (19) **GB** (11) **2 182 186** (13) **A**

(43) Application published **7 May 1987**

(21) Application No **8526878**

(22) Date of filing **31 Oct 1985**

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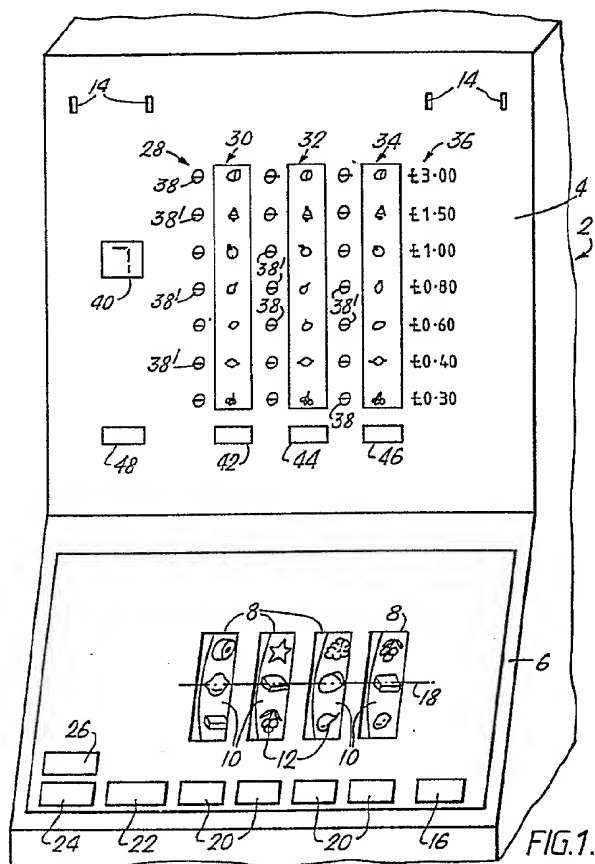
(51) INT CL⁴
G07F 17/34

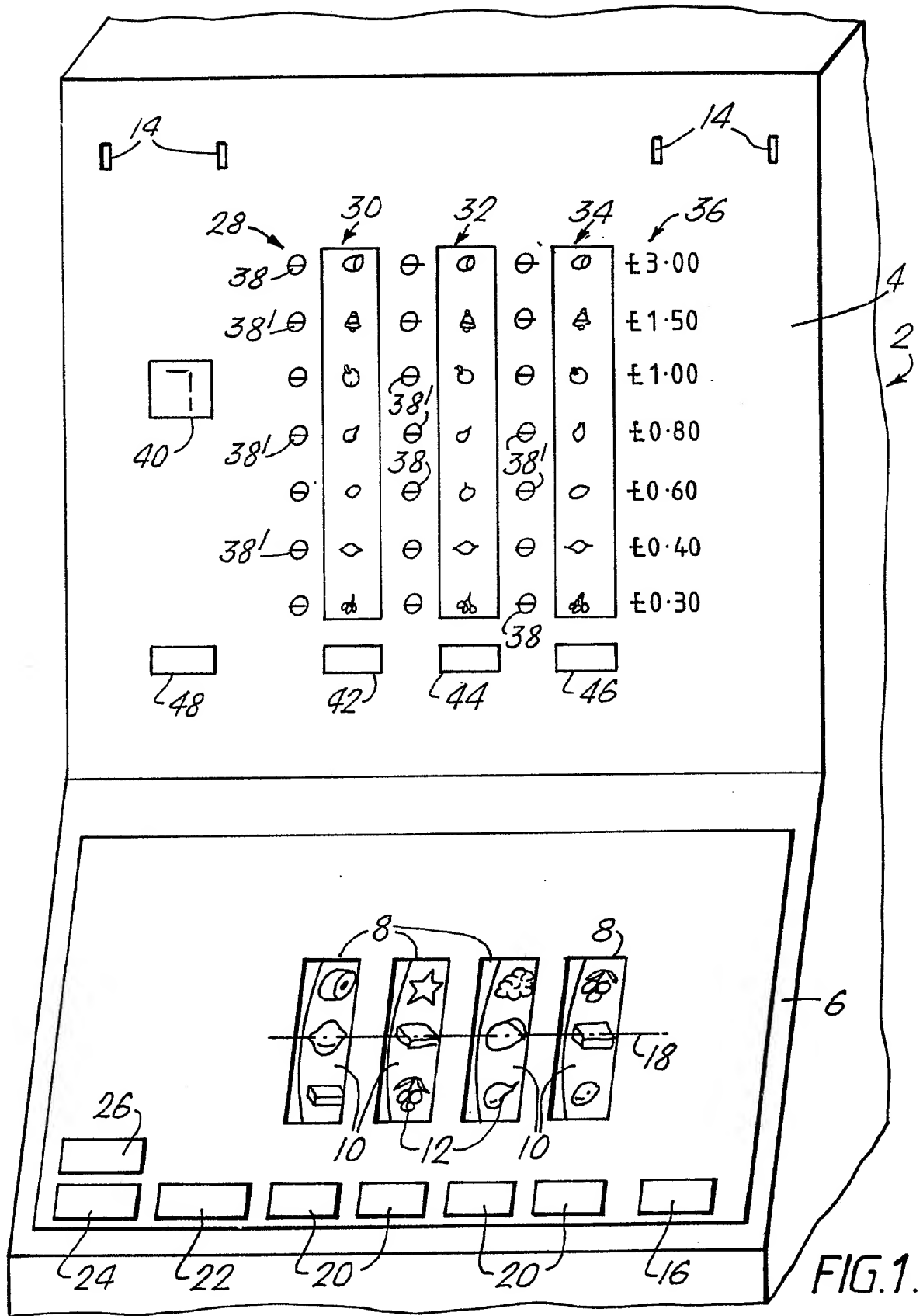(52) Domestic classification (Edition I)
G4V 118 AA
U1S 1174 G4V

(56) Documents cited
GB A 2137392   GB A 2098780
GB A 2113881   GB A 2097160
GB A 2106682   GB   1582942
GB A 2106295

(58) Field of search
G4V
Selected US specifications from IPC sub-classes A63F
G07F

(54) **Gaming machines**

(57) A gaming machine (2) has a display (28) for displaying a plurality of sets (30, 32, 34) of symbols. The symbols are displayed in winning combinations, and a win is achieved by a player by the selection of all the symbols of a winning combination. The machine initially selects some of the symbols on a random or pseudo-random basis. The machine is capable of selecting at least two symbols from at least one of the sets. The player is allowed to perform a nudging operation whereby the or each selected symbol in a set chosen by the user ceases to be selected, and an adjacent symbol is selected instead. The game is an ancillary feature brought into operation on random or pseudo-random occasions during the playing of a sequence of main games using spinning reels (10).
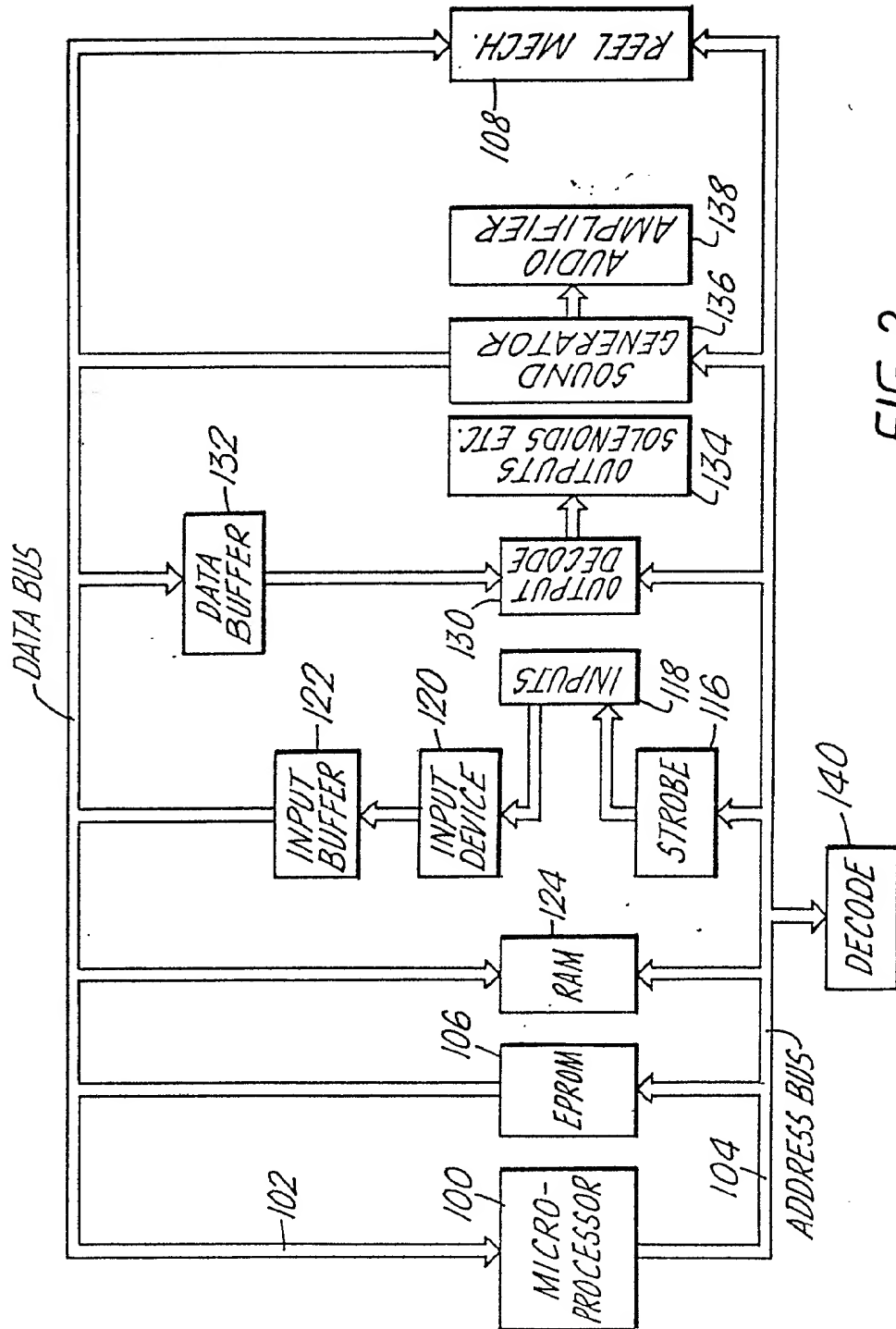
FIG.1.

GB 2 182 186 A

£3·00
£1·50
£1·00
£0·80
£0·60
£0·40
£0·30

FIG.1.

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FIG. 2.

SPECIFICATION

Gaming machines

5   This invention relates to gaming machines, which
term is used herein to refer to any device by means of
which a user can play a game and, depending upon
the results of the game, obtain a credit value. The
machine preferably pays out cash and/or tokens in an
10 amount corresponding to the credit value.
In the art, those machines which pay out only cash
are referred to as "gaming machines". Herein, how-
ever, the term gaming machine is used in a generic
sense, as the invention is applicable also to other
15 types of machines such as those known as "amuse-
ment with prize" machines, which pay out both cash
and tokens. The invention is particularly but not ex-
clusively applicable to machines known as "fruit
machines", which incorporate symbol-carrying reels
20 which are spun during the playing of a game so as to
alter in a random or psuedo-random manner the
combination of symbols which can be viewed by the
user. The invention is also applicable to machines
which incorporate other forms of display, such as a
25 panel carrying symbols which are selectively illum-
inated during the playing of a game, or a video dis-
play screen which displays simulated reels or other
symbols such as playing cards. Patent Specification
GB-A-2,117,155, for example, describes a machine to
30 which the present invention can be applied.
Generally, when playing these types of machines,
a game can result in any of several different types of
winning result, and a credit value accorded to the
user on achieving a win depends upon which of the
35 types of winning result he has achieved.
It would be desirable to provide a gaming machine
which is of enhanced attractiveness to a potential
player, so as to increase the use of the machine.
In accordance with one aspect of the present inven-
40 tion there is provided a gaming machine having
means for displaying two or more sets of symbols,
the symbols being displayed in winning com-
binations each formed of symbols from respective
sets, the machine being operable to select a number
45 of the displayed symbols including at least two sym-
bols from one of the sets, and being arranged to
allow a user at least partial control in the selection of
at least one of the symbols in an attempt to cause all
the symbols of at least one of the winning com-
50 binations to be selected.
In accordance with another aspect of the invention,
a gaming machine is operable to select symbols
from a plurality of sets thereof, and to award a win to
a player if the selected symbols include a winning
55 combination formed of symbols from respective
sets, wherein the machine is operable to select a ran-
dom or pseudo-random number of symbols from at
least one of the sets and at least one symbol from a
different set, and is arranged to allow the player at
60 least partial control over the selection of at least one
of the symbols in an attempt to achieve a winning
combination.
In accordance with a still further aspect of the in-
vention, a gaming machine is operable to display
65 two or more sets of symbols, and is operable to se-

lect a plurality of symbols therefrom, the machine
being capable of selecting any or all of the symbols
from at least one of the sets, and being arranged to
allow the user at least partial control over the selec-
70 tion of at least one of the symbols whereby the user
can attempt to cause selection of a winning combina-
tion formed of symbols from respective sets.
In accordance with another aspect of the invention,
a gaming machine is operable to select particular
75 symbols from a plurality of sets of sequentially-
arranged symbols, and to indicate to a user the selec-
ted symbols, the machine being capable of selecting
at least two symbols from at least one of the sets, the
relative position of the symbols within the respective
80 set being variable in dependence upon which of the
symbols have been selected, wherein the user has at
least partial control over the selection of at least one
of the symbols so that an attempt can be made by the
user to cause selection of a winning combination of
85 selected symbols from respective sets.
In accordance with yet another aspect of the inven-
tion, a gaming machine is operable to display a
plurality of sets of symbols and to select therefrom
particular symbols including at least two symbols
90 from at least one of the sets, the machine being oper-
able to indicate the selected symbols to a player and
to permit the player to alter the selection in an
attempt to cause a combination of aligned symbols
from respective sets to be selected in place of a pre-
95 vious selection of non-aligned symbols.
In accordance with a still further aspect of the in-
vention, a gaming machine is operable to display a
plurality of sets of symbols at respective locations, to
indicate particular selected locations to be potential
100 winning locations, including at least two locations
occupied by symbols of one of the sets, and then to
alter the relationship between the selected locations
and the symbols displayed thereat, under at least
partial control of the user, whereby the user can
105 attempt to cause symbols of different sets displayed
at selected locations to form a winning combination.
Preferably, the alteration is achieved by selecting dif-
ferent locations in place of those initially selected,
although instead it could be achieved by altering the
110 symbols at the selected locations.
In accordance with another aspect of the invention,
a gaming machine is operable to award a player with
a win if, following a selection operation, a winning
combination of symbols from respective sets is
115 aligned with a win line, wherein the number of win
lines and their locations may vary.
It will be appreciated that the invention provides in
effect a game which can be played by the user. This
may be the main game provided by the machine, but
120 preferably it is an ancilliary game which is occasion-
ally brought into action (e.g. on random or pseudo-
random occasions) as a bonus awarded during the
course of playing a main game, which preferably in-
volves the spinning of mechanical or simulated reels.
125 In one preferred arrangement embodying these
aspects of the invention, a gaming machine has a
panel on which is displayed (preferably fixedly) a
number of columns (or rows) of symbols. The
machine is capable of selecting a number of the dis-
130 played symbols, and of indicating the selected sym-

bols to the user e.g. by illuminating either the symbols or indicators adjacent thereto. The user is given partial control over the selection of symbols by virtue of the fact that once the machine has performed an
5 initial selection, the user is allowed a limited degree of adjustment of the selected symbols.

Preferably, this is achieved by the player operating means which causes one symbol no longer to be selected, and instead a different symbol in the same
10 set and adjacent to the previously-selected symbol to be selected. This is therefore analogous to the "nudging" feature commonly found in conventional fruit machines. Preferably, the nudging operation is carried out separately for each set of symbols, and if
15 two or more symbols have been selected within the same set, a single nudging operation preferably affects all the selected symbols in the set. There is preferably a limit to the number of nudging operations which the user can perform, or a limit to the
20 time in which he can perform nudging operations.

It is to be noted that such an arrangement differs substantially from the "nudging" feature commonly found in fruit machines, and provides different attractions to the player. The selection of two or more
25 symbols from one of the sets effectively defines a number of different positions or "win lines" to which the user's attention can be directed when performing nudging operations on the other sets of symbols. These positions or win lines themselves vary either
30 during the course of a particular game, because a nudging operation has been performed on the set containing the plurality of selected symbols, or from game to game, whereupon the initial selection of symbols by the machine will differ. In addition, it is
35 possible that the initial selection of symbols by the machine will result in more than one of the sets containing more than one selected symbol, so that the number of ways in which winning combinations can be achieved is substantially increased.
40 A winning combination of symbols preferably results in the player being awarded a credit value (although alternatively it could be arranged to provide some other advantageous feature). Preferably, different winning combinations give rise to different
45 credit awards. This adds to the player's interest when he is selecting which of the different routes he can choose in order to achieve a winning combination.

The game may cease when the player has first achieved a winning combination, but preferably
50 allows the player to continue so that repeated wins are possible. This means that the way the player operates the machine will greatly influence his winnings.

An arrangement embodying the invention will
55 now be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a gaming machine in accordance with the invention, and

Figure 2 is a block diagram of the circuitry of the
60 machine.

The specific embodiment to be described is a version of the well-known "fruit machine". Many examples of such machines are readily available, and the way in which they operate is well-known to those
65 familiar with the art.

Referring to Figure 1, the machine 2 has a vertical facia or panel 4 and an inclined facia or panel 6. The facia 6 has four apertures 8, which reveal portions of the circumferences of four reels 10 which are moun-
70 ted for rotation about a common horizontal axis. The reels carry symbols such as those shown at 12 on their peripheries, some of the symbols being visible through the apertures 8.

The machine can be played by inserting a coin or a
75 token through an appropriate one of several slots 14.

After the user has inserted a coin or token, a game may be started. This is achieved by pressing a start button 16. This causes the four reels 10 to spin, which is preferably achieved by using a stepper motor for
80 each reel. The reels then stop spinning, their final positions being determined in a random or pseudo-random manner. If the reels are positioned such that certain symbols are aligned along a win line 18, the user is credited with a win value, which in this
85 machine results in the paying out of coins in an amount corresponding to the win value.

Occasionally, a "hold" feature is provided whereby the user is given the opportunity to press one or more hold buttons 20, which will prevent, dur-
90 ing the subsequent reel-spinning operation, the spinning of each reel associated with a hold button which has been pressed. There is a cancel button 22 for cancelling the selection of reels using the hold buttons to permit a different selection before the reel-
95 spinning operation.

A "gamble" feature is provided each time the user obtains a winning result, whereby the user can choose either to collect his winnings by pressing a collect button 24 or to enter a gamble mode, as a re-
100 sult of which his win value may be increased or decreased, by pressing a gamble button 26.

The operation of the machine as described so far is conventional.

The vertical panel 4 of the machine 2 has a display
105 area indicated generally at 28 which fixedly displays three sets of symbols in respective columns 30, 32 and 34. Each symbol is aligned with symbols in the other columns, whereby a plurality of (in this case seven) horizontal rows of symbols are formed. Each
110 row represents a winning combination of symbols. A respective value is attributed to each of the winning combinations of symbols, and this value is indicated at the right-hand side of the combination as shown at 36.
115 The panel 4 has indicators such as those shown at 38, each disposed at the left-hand side of a respective symbol. When the respective symbol has been selected, the associated indicator is illuminated by energising a lamp disposed behind the front panel 4.
120 Illuminated symbols are indicated at 38'.

The panel 4 is also provided with a numeric display 40, push buttons 42, 44 and 46 associated respectively with the columns 30, 32 and 34, and a further push button 48, which are used in a player-
125 controlled nudging operation as will be described.

The game is played as a conventional machine until a special bonus feature becomes available, which can be indicated to the user by the flashing of a light (not shown). The awarding of the bonus feature
130 may occur on random or pseudo-random occasions,

and may if desired be dependent upon whether a par-
ticular symbol is displayed by the reels following
their spinning during the course of a normal game.
Although it is envisaged that the bonus feature come
5 into play following the playing of the main game, it
could alternatively take place before or during a
game.
    Once the bonus feature comes into play, the
machine makes a random or pseudo-random selec-
10 tion from the three sets of symbols 30, 32 and 34, and
indicates the selected symbols by illuminating the re-
spective indicators 38. If desired, the selection of
symbols could be dependent upon the symbols dis-
played by the reels 10.
15   The machine also calculates randomly or pseudo-
randomly a maximum number of permitted nudges,
which is then displayed by the display 40.
    The user may then press any one of the buttons 42,
44 and 46 either alone or simultaneously with the
20 button 48. The former case signifies a nudge down
operation on the respective set of symbols, whereas
the latter signifies a nudge up operation. A nudge
down operation causes each illuminated symbol 38'
in the associated column to cease to be illuminated,
25 and the downwardly adjacent indicator 38 to com-
mence to be illuminated. In other words, down-
wardly-adjacent symbols are selected in place of the
formerly selected symbols. Correspondingly, a
nudge up operation results in upwardly-adjacent
30 symbols being selected in place of the formerly
selected symbols.
    The aim of the user in operating the buttons 42, 44,
46 and 48 is to cause the indicators associated with a
complete horizontal row of symbols to be illumina-
35 ted, whereupon the credit value associated with that
row is awarded to the user. The user can then pro-
ceed to operate the buttons 42, 44, 46 and 48 to obtain
an award associated with a different row. (In an
alternative embodiment, the bonus feature ceases
40 when a player first achieves the selection of a winn-
ing combination.) Each time one of the buttons 42, 44
and 46 is pressed, the number displayed by the dis-
play 40 is decremented. Once that number reaches
zero, no more nudging operations are permitted.
45   In the present embodiment there are seven dif-
ferent winning combinations, and each is associated
with a different win value. Because nudge up and
nudge down operations can be carried out on each of
the sets of symbols, and at least one and preferably
50 more than one of the sets has (at least on certain
occasions) two or more symbols selected therefrom,
there are many different ways in which the user can
operate the machine during the bonus feature and
many different ways in which wins can be achieved.
55 Accordingly, a user will attempt to develop skills in
operating the machine in order to maximise the
wins, which thereby increases user interest.
    If desired, the machine can be arranged to award
extra wins if only the two left-most symbols of a hori-
60 zontal row are selected. In the preferred embodi-
ment, this feature is provided and the amount of the
win is constant irrespective of which of the horizontal
rows contains the two selected symbols.
    At the commencement of the bonus feature the
65 three symbols of a single horizontal row may initially

be selected by the machine. The machine can be
arranged automatically to award the player with the
win value associated with a combination initially
selected by the machine, or alternatively can be
70 arranged so that only combinations won as a result
of the user operating the nudge buttons 42, 44, 46
and 48 are awarded.
    Referring to Figure 2, the operation of the machine
2 is under the control of a microprocessor 100 con-
75 nected to data and address buses 102 and 104, re-
spectively. The way in which the microprocessor 100
operates is determined by a program stored in a non-
volatile memory 106, such as an EPROM, connected
to the data and address buses 102 and 104.
80   The data and address buses 102 and 104 are also
connected to a reel mechanism 108, which incor-
porates the reels 10 referred to above.
    By applying appropriate addresses on the address
bus 104, and by transmitting appropriate data on the
85 data bus 102, the microprocessor 100 can control the
number of pulses delivered to the driver motors of
each of the reels and thereby cause the reels to rotate
by a predetermined amount. Also the positions of the
reels can be determined by data delivered to the data
90 bus 102 by the reel mechanism 108.
    The address bus 104 is connected to a device 116
for strobing the inputs 118 of the machine 2. The in-
puts 118 include the above-mentioned switches 16,
20, 22, 24, 26, 42, 44, 46 and 48, and connections to a
95 coin and token validator which generates signals in-
dicating the value of inserted coins and tokens.
    Upon actuation of one of the inputs 118, an input
device 120 delivers, via an input buffer 122, data to
the bus 102 to indicate to the microprocessor 100 that
100 a switch has been actuated or a coin or token has
been inserted.
    A random access memory 124 coupled to the
address buses 102 and 104 is operable, during use, to
store such information as the positions of the reels 10
105 and the amount of accumulated credit.
    An output decode device 130 is coupled to the
address bus 104 and transmits data received from
the address bus 102 via a data buffer 132 to output
device 134, including solenoids which are actuated
110 to dispense coins and tokens, lamps on the machine
to indicate different modes of operation, the lamps
used for illuminating the indicators 38, and the circuit
used to drive the digital display 40.
    A sound generator 136 is coupled to the buses 102
115 and 104 so that the microprocessor can cause the
generator to generate audio signals which are delive-
red to an amplifier 138 and then to a speaker (not
shown).
    An address decoder 140 is coupled to the address
120 bus 104, and is arranged to enable the devices selec-
ted by the microprocessor 100 for transmission or re-
ception of data by means of enable lines (not shown).
    Numerous features can be added, and modi-
fications made, to the embodiment described above.
125 Some of these are set out below:
    1. In the above embodiment, the initial selection of
symbols is carried out at the commencement of the
bonus feature, the selected symbols then being indi-
cated to the user by illuminating the corresponding
130 indicators 38. Instead, the selection of the symbols

can be carried out progressively, over the course of several games played by the spinning of the reels 10. The symbols selected may be dependent upon those displayed by the reels once they have stopped spinn-
5 ing. For example, some of the symbols 12 on the three left-most reels 10 may have superimposed thereon further, "bonus" symbols. If any of these is displayed on the win line 18 following the spinning of the reels, the corresponding symbol in the cor-
10 responding one of the columns 30, 32 and 34 is selected. As successive games are played, the number of symbols selected increases so that the bonus feature becomes gradually more valuable and the user consequently has more incentive to continue playing.
15   2. As described above, the symbols in columns 30, 32 and 34 are fixed, and arranged in winning combinations. The player may cause the illumination of the corresponding indicators 38 to alter in order to achieve selection of all symbols of a winning com-
20 bination. Instead, the illumination of the indicators 38 can remain constant, and the images of the symbols in the appropriate column 30, 32 and 34 shifted accordingly. One way of achieving this would be for the machine to select randomly or pseudo-randomly
25 complete rows of symbols instead of individual symbols, the user then being able to nudge each symbol column individually to alter the symbol combination on each selected row or "win line" to try to achieve a winning combination. Such an embodiment (which
30 would require only a single indicator 38 for each row) would still have the advantageous variety of an indeterminate number of win lines located at indefinite positions. The machine may be provided with means capable of displaying electrically alterable symbols,
35 e.g. a video display, to facilitate displaying symbols which give the appearance of shifting.
    3. The machine may provide a "wrap-around" feature whereby performing a nudge down operation on a set of symbols wherein the lowermost
40 symbol has been selected causes the uppermost symbol to be selected, and performing a nudge up operation on a set wherein the uppermost symbol has been selected causes the lowermost symbol to be selected. Correspondingly, if the symbols rather
45 than the illuminated indicators are nudged, nudging down causes the lowermost symbol to be placed at the uppermost location and nudging up causes the uppermost symbol to be placed at the lowermost location.
50   4. In the above embodiment, the player is given limited control over symbol selection from all the displayed sets by using a nudging facility. Alternative arrangements are possible. For example, the player may be limited in his choice of which of the sets to
55 nudge (e.g. he may be permitted to nudge only the central set, in which case it is preferred that the machine be capable of selecting a plurality of symbols from each of the other sets). Player-control may be achieved without using a nudging facility. The
60 machine may be arranged to select symbols of one or more sets in sequence, the player being able to halt this sequential selection, following which the machine provides an award in dependence on which symbols are selected at the point at which the player
65 halted the operation. One particularly convenient

way of achieving this is for the indicators 38 of a particular column to be illuminated in turn, one after the other, starting from the top (or bottom) to simulate one or more falling (or rising) balls. The player
70 attempts to halt a "ball" at what he feels is an advantageous position. This can be carried out in turn for each of the other columns, or the machine can select symbols from the other columns independently of the player.
75   5. The machine may be provided with a feature whereby the user can gamble the number of permitted nudges displayed by the display 40. For example, once the bonus feature becomes available, the user may be permitted to operate the gamble button 26,
80 and the machine will then increase or decrease the number of permitted nudges on a random or pseudo-random basis.
    6. The machine may be arranged so as to provide a credit award if a single, predetermined one of the
85 symbols on the panel 4 is selected, rather than always requiring a combination of symbols to be selected.
    7. The machine may have an automatic facility whereby adjustment of the selected symbols to
90 achieve the most favourable winning combination is performed automatically, preferably but not necessarily in response to the user actuating a means provided to permit selection of this automatic operation.
95

CLAIMS

    1.   A gaming machine which can display two or more sets of symbols, and which permits a user to
100 play a game by enabling the user at least partial control in making selections from the symbols so that the player can attempt to achieve the selection of a winning combination formed by symbols from respective sets, wherein the machine is capable of allo-
105 wing of any two, at least, of the symbols from at least one of the sets to be simultaneously selected.
    2.   A machine as claimed in claim 1, wherein the machine is capable of allowing simultaneous selection of any two, at least, of the symbols from each of
110 the sets.
    3.   A machine as claimed in claim 1 or 2, wherein the machine displays the symbols in winning combinations, the symbols of each combination being aligned, and wherein the player is allowed at least
115 partial control in making the selection so that he may attempt to cause a selected symbol from one of the sets to be aligned with a selected symbol from the or each of the other sets.
    4.   A machine as claimed in any preceding claim,
120 wherein the machine is operable to determine on a random or pseudo-random basis the number of symbols which are selected from at least one of the sets.
    5.   A machine as claimed in any preceding claim, the machine having a fixed display of said symbols,
125 and means for indicating those symbols on the display which have been selected.
    6.   A machine as claimed in any preceding claim, wherein the machine is operable to make an initial selection of symbols and then to permit the player to
130 vary the selection in order to attempt to achieve

selection of a winning combination.

7. A machine as claimed in claim 6, wherein the player is allowed to perform a nudging operation whereby the or each selected symbol in a set ceases
5 to be selected and a symbol adjacent thereto within the set is selected instead.

8. A machine as claimed in claim 7, wherein the machine is arranged to allow the user to select which of the sets of symbols a nudging operation is to be
10 performed on.

9. A machine as claimed in any one of claims 1 to 5, wherein the machine is arranged to select symbols in a sequence, and has means permitting the user to halt the sequential selection.
15 10. A machine as claimed in any preceding claim, wherein the game is an ancillary game, the machine also being arranged to permit the playing of a different, main game.

11. A machine as claimed in claim 10, wherein the
20 machine has mechanical or simulated symbol-carrying reels for use during the playing of the main game.

12. A machine as claimed in claim 10 or claim 11, wherein the machine is arranged to allow the playing
25 of the ancillary game at random or pseudo-random occasions during the playing of a succession of main games.

13. A gaming machine substantially as herein described with reference to the accompanying
30 drawings.